

**ATTACHMENT D**  
**ELECTRO-MOTIVE DIESEL**  
**TIER 2 CERTIFICATE OF CONFORMITY**

# **ELECTRO-MOTIVE**

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## **US EPA ISSUES MARINE TIER 2 CERTIFICATE OF CONFORMITY applicable to EMD SERIES 710G7C-T2 ENGINE FAMILY**

Electro-Motive Diesel, Inc. (EMD) is pleased to announce the United States Environmental Protection Agency (US EPA) has issued a 2006 Model Year Tier 2 emissions Certificate of Conformity to EMD for our Series 710G7C-T2 family of diesel marine engines in accordance with the standards of 40 CFR 94.

The US EPA Marine Tier 2 Certificate of Conformity applies to

- EMD Series 710G7C-T2 Engine Family, including:

8-cylinder	2000 BHP	@ 900 RPM
12-cylinder	3000 BHP	@ 900 RPM
16-cylinder	4000 BHP	@ 900 RPM
20-cylinder	5000 BHP	@ 900 RPM

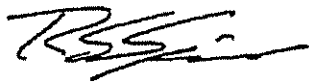
(All rating shown above are Continuous with 10% overload available)

- Duty Cycles for the complete 710G7C-T2 Engine Family, including:
  - Table B-1 (IMO E3) Variable Speed Fixed-Pitch Prop @900 RPM
  - Table B-2 (IMO E2) Constant Speed Propulsion @900 RPM
  - Table B-3 (IMO C1) Variable Speed Variable-Pitch Prop @900 RPM
  - Table B-1 (IMO E3) Variable Speed Fixed-Pitch Prop @800 RPM

The EMD Series 710G7C-T2 Family of engines meet the not-to-exceed (NTE) zone requirements of 40 CFR 94.8(e) when operated under all conditions which may reasonably be expected to be encountered in normal operation and use.

A copy of the US EPA Certificate of Conformity is enclosed for reference.

Please contact the writer with any questions regarding this subject.

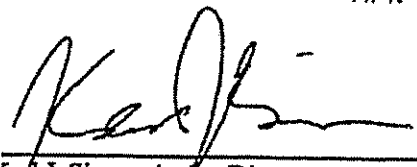


Robert E. Spicer  
Business Manager  
Power Products

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

2006 Model Year Certificate of Conformity

Manufacturer: **ELECTRO-MOTIVE DIESEL, INC.**  
Marine Diesel Engine Family: **6EMDM0710GT2**  
Certificate Number: **EMD-MCI-06-04**  
THC+NOx FEL: **N/A**  
PM FEL: **N/A**  
Date Issued: **APR 19 2006**

  
Karl J. Simon, Acting Director  
Compliance and Innovative Strategies Division  
Office of Transportation and Air Quality

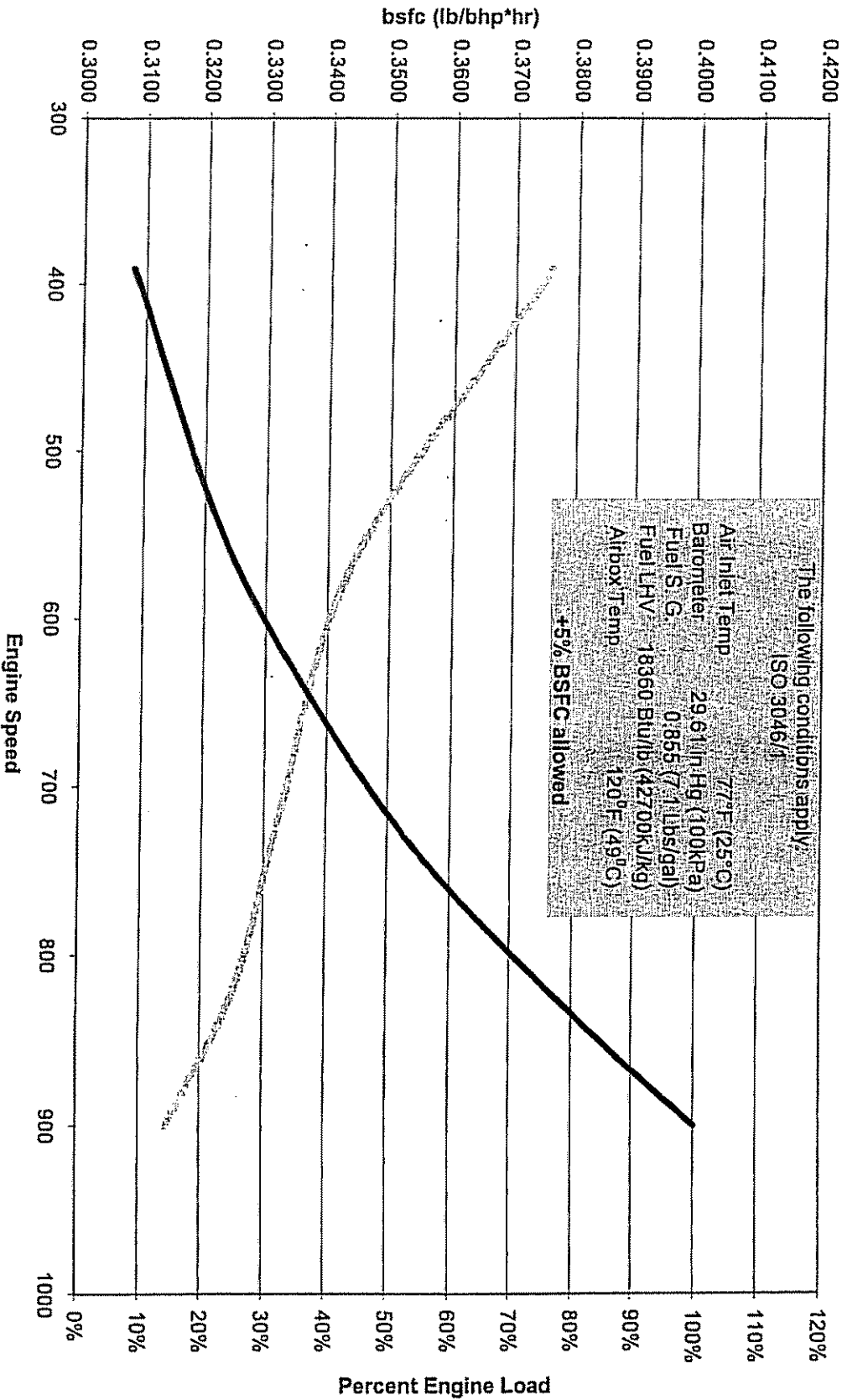
Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR 94, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following marine engines, by engine family, more fully described in the documentation required by 40 CFR Part 94 and produced in the stated model year. This certificate of conformity covers only those new marine compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 94 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 94. This certificate of conformity does not cover marine engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 94.215 and 94.504 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 94. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 94.

This certificate does not cover marine engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

# ELECTRO-MOTIVE

8-710G7C-T2 Engine  
2000 BHP @ 900 RPM Rating  
US EPA Marine Tier 2 Emissions Compliant  
Propeller Cube Curve  
ISO 3046/1



**ATTACHMENT E**  
**ENGINE AND TUG INFORMATION**

## Tug Boat Engine Information

Vessels that Towed the Barge Jovalan:

1. Tug Eagle
2. CF-Campbell
3. Millennium Star
4. Millennium Dawn

Engine Serial Numbers and Model Numbers:

### Tug Eagle

Main Engine Serial Number: 4TN00037

Model Number: 3512B

Starboard Engine Serial Number: 4TN00038

Model Number: 3512B

### CF-Campbell

Main Engine Serial Number: 8KN0073

Model Number: CAT 3516B

Starboard Engine Serial Number: 8KN00074

Manufacturer: Caterpillar

### Millennium Star

Main Engine Port Serial Number: 8KN00407

Main Engine Starboard Serial Number: 8KN00406

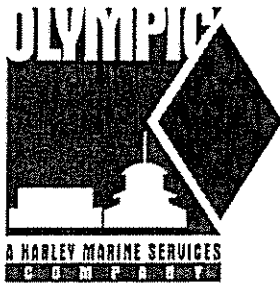
Model Number: 3516B

### Millennium Dawn

Main Engine Serial Number Port: 8KN00454

Main Engine Serial Number Starboard: 8KN00453

Model Number: 3516B



# OLYMPIC TUG & BARGE, INC

## EQUIPMENT

Boat	Length	Beam	Depth	Built	HP	Engines
Alyssa Ann	93.7'	27.0'	12.0'	1966	2,000	EMD
<u>Aries</u>	68.6'	24.1'	7.3'	1980	1,252	DET
<u>Brian S.</u>	98.5'	29.2'	12.5'	1963	3,000	EMD
<u>Catherine Quigg</u>	61.0'	23.0'	11.0'	1977	1,250	DET
CF Campbell	100.2'	31.2'	11.3'	1975	4,400	CAT
Eagle	98'	32'	11.7'	1978	3,000	CAT
Ernest Campbell	107.0'	32.0'	14.4'	1969	3,000	EMD
<u>Lela Joy</u>	77.5'	25.4'	8.8'	1970	2,800	DET
Lissy Too	55.6'	20.0'	8.4'	1974	2,000	DET
<u>Lucy Franco</u>	69.0'	26.0'	9.1'	1981	1,530	CAT
Lucy Sondland	44.7'	17.0'	5.8'	1957	800	DET
Max Sondland	67.9'	22.2'	7.1'	1979	700	DET
<u>Pacific Falcon</u>	121.1'	32.1'	10.9'	1967	3,950	EMD
<u>Sarina</u>	74.1'	24.4'	11.8'	1969	800	DET
<u>Seana C</u>	101.4'	26.8'	12.3'	1954	3,000	EMD

Oil Barge	Length	Beam	Loaded Draft	Built	Black Oil Capacity (bbls)	Diesel Capacity (bbls)
<u>Bernie 112</u>	218.3'	60.0'	12.9'	1982	23,500	2,000
<u>CF Starlight</u>	296.0'	60.0'	18.2'	1982	49,000	-

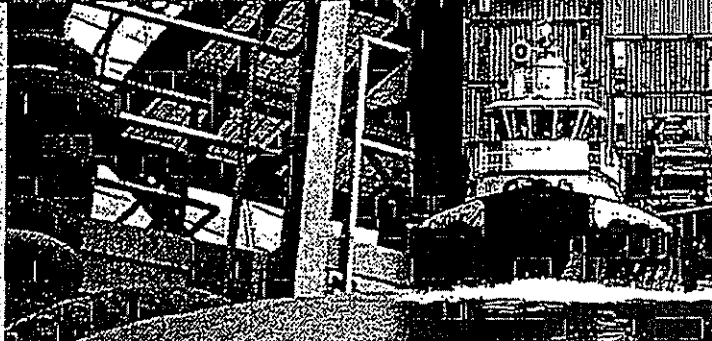
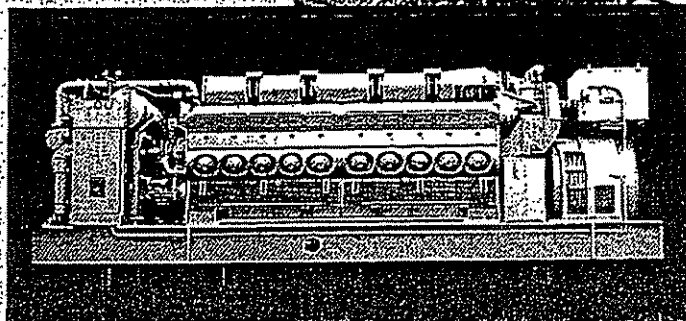
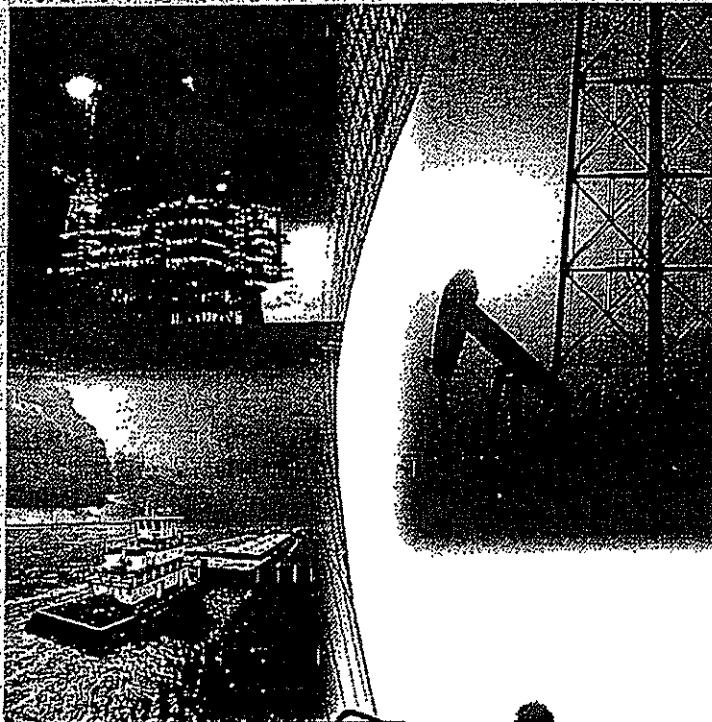
<u>David 120</u>	296.0'	60.0'	18.2'	1982	44,000	5,000
Dusk	218.4'	60.0'	12.8'	1982	23,500	-
<u>HMS 2000</u>	209.2'	54.0'	11.0'	1994	20,000	1,200
Investigator	214.3'	62.8'	11.25'	1981	14,500	2,500
<u>Lily 101</u>	145.0'	50.0'	8.75'	1980	9,000	-
Meghan 102	145.0'	50.0'	8.75'	1981	9,000	-
Nathan 114	218.4'	60.0'	12.8'	1982	23,500	3,800
<u>Norton</u>	271.7'	76.0'	14.6'	1980	42,000	2,500
Shauna Kay	285.0'	78.0'	15.7'	2000	38,500	-





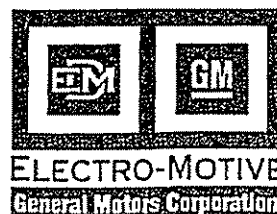
# MILLENNIUM MARITIME, INC. EQUIPMENT

Boat	Length	Beam	Depth	Built	HP	Engines
<u>Millennium Dawn</u>	99.0'	34.0'	17.0'	2002	4400	CAT
<u>Millennium Maverick</u>	96.0'	38.0'	18.0'	1996	4000	EMD
<u>Millennium Star</u>	99.0'	34.0'	17.0'	2000	4400	CAT
Z-Three	87.7'	32.0'	14.8'	1999	4000	CAT



- Marine Propulsion
- Electric Generating Plants
- Industrial Power Units
- Offshore Well Drilling
- Power Shovel and Dragline Applications
- Land Drilling Rigs
- Dredging

EMD Power Products



# GM/EMD Diesel Engines

800-5000 HP

Wide Power  
Applications

Electro-Motive Division (EMD) of General Motors Corp. produces diesel power for marine propulsion, offshore and land based oil well drilling rigs, stationary power generation and railroad locomotives.

The GM/EMD line of engines is available in 8-, 12- and 16-cylinder roots blown and 8-, 12-, 16- and 20-cylinder turbocharged models. The horsepower ranges from 800 to 5000.

More than half a century of engine design experience has made Electro-Motive a leader in the development of diesel motive power. Electro-Motive is the only diesel engine manufacturer of its size to have produced more than 65,000 engines. This success stems from product reliability, service ability, load acceptance capability, low operating costs and ease of maintenance with standardized components.

## General Data — Common to both 645 and 710 Series Diesel Engines

Type	2 cycle—45° Vee
Crankcase and oil pan construction	Welded steel
Cylinder air inlet	Ports in cylinder liner
Exhaust	Four valves in cylinder head
Piston cooling	Oil-direct pressure stream
Main bearing lubrication	Full pressure
Lube oil pumps	Main oil, piston cooling, scavenging engine driven, positive displacement, helical gear type
Engine overspeed trip	Centrifugal—Independent of Governor
Governor	Woodward*
Fuel supply pump	Positive displacement, engine driven
Fuel injectors	GM unit injectors—needle valve
Engine starting	Air motor*
Engine cooling water pumps	Engine driven—centrifugal
Crankpin diameter	6 1/2 inches (165.10 mm)
Piston pin diameter	3.68 inches (93.47 mm)
Rotation facing the flywheel	Counterclockwise*

\*Options Available

## Data Applicable to Specific Engine Series

	645 Series Engines	710 Series Engines
Bore x stroke	9 1/2 x 10 inches (230.19 x 254.00 mm)	9 1/2 x 11 inches (230.19 x 279.40 mm)
Displacement per cylinder	645 cubic inches (10.57 liters)	710 cubic inches (11.64 liters)
Piston speed	1250 ft/min (381 m/min) at 750 rpm 1500 ft/min (457.2 m/min) at 900 rpm	1375 ft/min (419 m/min) at 750 rpm 1650 ft/min (503 m/min) at 900 rpm
Crankshaft main bearing diameter	7 1/2 inches (190.5 mm)	8 1/2 inches (215.9 mm)

## Data Applicable to Specific Engine Model Numbers

	Roots Blower		
Engine Model	8-645E	12-645E	16-645E
Number of Cylinders	8	12	16
Compression Ratio	18:1	18:1	18:1
BMEP @ 900 RPM (PSI)	90	85	90
Number of Main Bearings	5	7	10
Number of Engine Blowers	1	2	2
Type	Roots Type-Helical Lobes	Roots Type-Helical Lobes	Roots Type-Helical Lobes
Driven by	Engine Gears	Engine Gears	Engine Gears <sup>1</sup>

	Turbocharged							
Engine Model <sup>1</sup>	8-645FB	12-645FB	16-645FB	20-645FB	8-710GB	12-710GB	16-710GB	20-710GB
Number of Cylinders	8	12	16	20	8	12	16	20
Compression Ratio	16:1	16:1	16:1	16:1	16:1	16:1	16:1	16:1
BMEP @ 900 RPM (PSI)	130	145	145	136	155	155	155	155
Number of Main Bearings	5	7	10	12	5	7	10	12
Number of Turbochargers	1	1	1	1	1	1	1	1
Type	+	+	+	+	+	+	+	+
Driven by	+	+	+	+	+	+	+	+

<sup>1</sup>Centrifugal Flow

+Exhaust Gas and/or Engine Gears Through an Over-Running Clutch

# Marine Propulsion and Generating Units

## Marine Equipment Sets (ME) for Marine Propulsion Units (ABS Ratings)\*

		800 RPM Ratings		900 RPM Ratings	
Marine Drive Model No.	Engine Model	Engine BHP	Engine kW	Engine BHP	Engine kW
Roots Blown					
ME8E6	8-645E6	-	-	1050	785
ME12E6	12-645E6	-	-	1500	1120
ME16E6	16-645E6	-	-	2100	1565
Turbocharged					
ME8F7B	8-645F7B	1525	1137	1700	1265
ME12F7B	12-645F7B	2305	1720	2550	1900
ME16F7B	16-645F7B	3150	2349	3505	2610
ME20F7B	20-645F7B	3600	2685	4000	2985
ME8G7B	8-710G7B	1760	1310	2000	1500
ME12G7B	12-710G7B	2625	1960	3000	2240
ME16G7B	16-710G7B	3525	2628	4000	2985
ME20G7B	20-710G7B	4400	3310	5000	3730

## Marine Equipment Sets (ME) for Generator Set Units (ABS Ratings)\*

Generator Set Model No.	Engine Model	Continuous Output	Continuous Output
		60 Hz-900 RPM	50 Hz-750 RPM
Roots Blown			
ME8E6	8-645E6	745 kW	570 kW
ME12E6	12-645E6	1075 kW	865 kW
ME16E6	16-645E6	1500 kW	1210 kW
Turbocharged			
ME8F7B	8-645F7B	1210 kW	1010 kW
ME12F7B	12-645F7B	1825 kW	1530 kW
ME16F7B	16-645F7B	2500 kW	2100 kW
ME20F7B	20-645F7B	2865 kW	2580 kW
ME8G7B	8-710G7B	1440 kW	1200 kW
ME12G7B	12-710G7B	2150 kW	1790 kW
ME16G7B	16-710G7B	2865 kW	2385 kW
ME20G7B	20-710G7B	3580 kW	2980 kW

\* Subbase, controls and customized final assembly furnished by EMD authorized Power Products Distributors worldwide.

A complete line of GM/EMD engines is available to meet requirements for marine propulsion and marine generator set applications. A complete power package with engine, reverse-reduction gear or generator and accessories is available through EMD Power Products Distributors. The propulsion units are also available without skid mounting for direct application to the vessel structure.

Electro-Motive marine propulsion drives are also available with two, three or four engines driving a common reverse-reduction gear. A straight-reduction gear is available when controllable pitch propellers are required.

